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INTERNATIONAL STATISTICAL COMPARISONS.

The following pages are taken from a long paper prepared by Mr. Robert Giffen, C.B., LL.D., and read at the last meeting of the Australasian Association for the Advancement of Science.

I proceed next to statistics from which inferences are commonly drawn as to the qualities of a population,—I mean statistics on such subjects as education, crime, sexual morality, drunkenness, insolvency, and thrift. On all these points different countries have statistics, which may have a meaning when they are properly used, but which it is most difficult to use properly.

To begin with education. Which is the most fortunate population of the world as regards the general education of the people? One often hears of the United States in this connection,—of the numbers of children of school age and the numbers attending school as compared with less fortunate populations. But let me take the following passage from a memorandum by Mr. Fitch, one of Her Majesty's chief inspectors of training colleges, on the working of the Free School system in the United States, France, and Belgium :—

“In England and Wales the calculations of average attendance are made on the assumption that every school is open at least 400 times, or 200 days in the year. It is on this basis that the annual returns in the official report of the Education Department state the average attendance of scholars in infant schools and departments to be 68 per cent, and that in schools for older children to be 82.2 per cent. But in the United States there is no uniform or generally accepted rule respecting the length of the school year. In the principal cities, especially in the East and West, the schools are open 10 months out of 12, and in these the statistics of attendance may be fairly compared with our own. But on taking the country through the average number of days in which the public schools are open is 129 in the year, and this fact implies that in the country places, especially in the South Atlantic and South Central States, the number of school days falls much below that average. In Alabama and in Georgia the schools are open only three months in the year, the teachers are paid by the month, and hold no permanent appointment. In Louisiana and Missouri the small sum appropriated to education by the State barely

suffices to keep the schools at work more than four months in the year. In Nebraska the returns for 5407 schools show 3904 to be kept open for six months and upwards, 529 for more than four but less than six months, and 974 for less than four months.

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It is manifest, therefore, that the figures representing the regularity of attendance require material correction and reduction before they can be properly compared with the statistics of European countries in which schools are, as a rule, kept open during nearly the whole of every year."

The second subject I have named in this connection is crime, and in thinking of it I confess I have had in my mind certain comparisons which have been made in England by visitors returned from Australia to the disadvantage of Australia. There is twice the crime in Australian colonies per head of population, we have been told, that there is in England. A distinction has to be made between mere police and administrative offences, which vary largely according to the things which Legislatures in their wisdom subject to fine or not, and the more serious offences, such as robbery and murder, which are what we think of when we talk of crime. But in hardly any two countries that I know of is the distinction drawn on exactly the same lines. Further, even if the distinctions were much the same, another difference is made by the police. You may have fewer trials and convictions in one country than in another simply because the police for various reasons is less efficient, not because there is less crime.

But admitting that exact comparisons can be made, that statistics of crime in two countries are reduced to common denominators, I should like to point out that the logic of using them as indicative in any way of the general superiority of one population over another may be at fault. So far as can be judged, the so-called crime statistics of a country are not necessarily significant very much of the general quality of a population, but they may be significant only of the existence of a criminal element, which is like a disease from which a community suffers, but a disease of a superficial, and not of a vital, character. One population may thus have more crime in it than another, even much more crime, but substantially the two peoples may be almost alike, the extent of the criminality in both being quite immaterial. Say, for instance, that the criminal population by which almost all the crime is done in one country is 1 in 500, or 1-5th of 1 per cent, and

in another population it is 1 in 250, or 2-5ths of 1 per cent, is not the criminal element in either so small as to tell you nothing of the general constitution of the people? Not only, therefore, must criminal statistics be used with care as far as the mere data are concerned, but the difficulty of using them as indicative of the general qualities of a population is overwhelming. They can only be used, if used at all, in conjunction with much other information and statistics.

The statistics bearing on sexual morality are equally difficult to handle. The test here that is most commonly used is that of illegitimacy; but the truth is that illegitimacy by itself tells little, for the simple reason that in a town community there may be prostitution without illegitimate births, whereas in a rural community there may be even less profligacy than in the town, but with a larger number of illegitimate births, in consequence of there being no prostitution. In one country also the births may be registered as legitimate, through the children being born in wedlock; but this may go along with a general laxity of morals of a remarkable kind. Sexual immorality is also like crime itself, even when it can be measured on the same basis in two different communities, more or less a thing apart, and it may or may not be significant of the general *morale* of the population. I suppose it is true, for instance, that the rural population of Ireland stands better, as far as statistics of illegitimacy are concerned, than that of Scotland; but it would be a rash inference that in general *morale* the rural population of Ireland is superior to the Scotch. For certain purposes the statistics are good enough, but they must not be pushed to conclusions they do not bear.

Statistics as to drunkenness also require a good deal of careful handling. In fact, I see no way myself of establishing statistically that one population is more or less drunken than another. Apart from the difficulty already referred to, arising from the different distribution of two populations according to age, so that one population has proportionately more adults than another, and consequently has a larger proportion of convictions for drunkenness and a larger proportionate consumption of alcoholic liquors,—the two tests usually applied in such comparisons,—it has to be considered that the tests themselves are not very good. The convictions for drunkenness, it is plain, like convictions for crime generally, may be very largely a matter of definition and of police administration. Before comparisons can be made the state of legislation and of police administration in

the countries compared must be considered. As regards the consumption of alcoholic liquors again, I have never seen any statistics satisfactorily connecting a relatively large consumption of alcoholic liquors with drunkenness. On the contrary, the consumption in every community is probably at all times much more largely the consumption of sober people than that of people who drink to excess, and you may have much drunkenness among a people who, like the Americans, are generally total abstainers, and little among a people like the populations of the southern states of Europe, who are generally moderate drinkers. Thus the question of drunkenness, or the reverse, in a population is not to be easily treated by statistics.

The statistics of bankruptcy or insolvency again are often quoted as a test of the comparative excellence of commercial communities. Here again I have had in my mind some recent comparisons at home between certain of the Australian colonies and England as regards insolvency. These colonies, we have been told, have twice as many failures per head of population as England, or some such proportion. But the traps in dealing with bankruptcy statistics are innumerable. Even in England it is not easy to compare one period with another, owing to difference of legislation making the conditions and record of official insolvency different at one time from what they are at another. The law at one time makes whitewashing so easy that debtors readily avail themselves of the courts to make themselves officially insolvent, and so you have a large number of bankruptcies in the official statistics. At another time the law is so stringent that debtors evade the courts, while creditors do not make them bankrupt because it is not worth while to do so, and so the official bankruptcies diminish. At one time also non-traders may be made bankrupt, at another time they may not be; and so the record varies. Unless, therefore, the whole basis of the bankruptcy law in each case is studied, no comparison is possible either between period and period in the same country or between different countries. Further difficulties would arise in any comparison owing to the length of the commercial cycle, which renders it most dangerous to take the figures of one year only, or even of two or three years for comparison. We can imagine, then, what wild work is made by amateurs when they compare the insolvency of Australia and England. Apart from these differences there are others which are due to fundamental differences of economic condition. I believe, for instance, that in England a larger proportion of the busi-

ness done is carried on by joint stock companies than is the case in Australia. This may or may not be the case. But, supposing it to be the case, how can the failures of England be compared at all with those of Australia without taking account of the liquidations of joint stock companies, and to how many units of individual failures is that of a joint stock company to be considered equal? I would not go so far as to say that no useful comparison could be drawn from existing data by those who go carefully into the subject and study all the conditions. What I am contending for is that it is utterly impossible for writers in a hurry to make anything of the first figures that come to hand, and assume that the official record of failures in one country at one time means the same thing as the official record of failures in a totally different country at the same or another time.

Here, too, I would also demur to the test of bankruptcy itself as indicative of the general commercial character of a people, even if figures for comparison could be correctly ascertained. More bankruptcy in the one case than in the other may simply mean greater enterprise making more opportunity for failure, and not an excess of dishonesty in the one compared with another. It may also mean that the industries carried on in the one country, and which are suitable to be carried on in it, are essentially more fluctuating at a given period than the different industries of another country. Farming is often the most fluctuating of all industries. A country dependent on farming may suffer more from bankruptcy at a given date than a country less dependent. In turn, a manufacturing or commercial country may suffer more from catastrophies, like war or invasion, than an agricultural country would suffer. Perhaps even these difficulties could be overcome or evaded, and bankruptcy statistics be handled so as to indicate differences of character between two peoples; but the labor of the comparison would be very considerable indeed if anything is to be made of it at all.

I come finally to the last branch of statistics referred to as being often used to compare the character of two people, viz., the statistics of thrift or the diffusion of property among the masses. Here the temptation is to take some one form of saving, such as savings banks, or the holding of land, or investment in government stocks, and roughly judge one people by their habits as to this one form of saving. So far as I have observed, the usual comparisons in detail, even as to the one branch of saving selected for comparison, are most erroneous.

Thus, I have seen the number of separate inscriptions of French *rentes* in the books of the French Ministry of Finance treated as the number of separate holders. The truth is that the question of the number of inscriptions of *rentes*, the inscriptions being anonymous, is purely a formal matter, depending upon the sub-divisions which are most convenient for dealing. One individual may, and as a rule does, hold many inscriptions. When the French issued new loans in 1871 and 1872 to pay the war indemnity to Germany, and in subsequent years to re-equip their army and extend their railways, the number of inscriptions in the books of the Ministry of Finance enormously increased, but it did not follow that the number of separate holders of French *rentes* increased in the same degree, or even increased at all. The same with the holding of land. A broad distinction has to be drawn between the number of separate occupiers and the number of separate occupations, the latter (as in Ireland) being often far more numerous than the former. But, admitting that the figures as to one branch only can be got hold of, it is plain that, unless saving habits in all directions can be compared, no useful comparison can be made at all. What is done by friendly societies, building societies, insurance companies and the like, must all be taken into account, as well as the savings banks, which are most often quoted, or the holdings of the government debt, or the holdings of land, which are the favorite investments of the masses of some countries. But I do not know of any comparison of the kind in which these conditions are complied with. French peasants and working classes are often assumed to be much more saving than the corresponding classes of England, but the statistical proof seems to be wanting, and I am not sure that if the accumulations of English unions, friendly societies, and co-operative societies were properly taken account of, as well as savings banks, holdings of government debt, and investments in land, the English working classes would come so very badly out of the comparison. At any rate, the comparison is more difficult than is often thought.

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I pass on next to a class of statistics which are still more frequently used for international comparison, viz., the statistics of production, industry and trade.

The leading statistics thus used may be classed under the heads of agricultural production, manufacturing production, imports and exports, including shipping, wages, and, finally, accumulated wealth.

The division is not a logical one, but it appears convenient for the present purpose, which is to explain the principal dangers into which the unwary in dealing with the vast branches of statistics included in this department are apt to fall.

As regards agricultural production, then, the initial difficulty of all the statistics is that which we have already had in dealing with population itself,—the different value of the units which go by the same name. The wheat, oats, and barley of one country, though called by the same names, are not the same as the wheat, oats, and barley of another country. There are the very greatest differences in quality, as any price list of London or other market, where grain from every part of the world is sold, would show. Yet nothing is so common as comparisons of the world's production of wheat, for instance, in which this difference of quality is ignored, and fine reasonings are indulged in where this difference of quality might seriously affect the result. What is true of grain is as true, if not more true of live stock. There are sheep and sheep, cattle and cattle, horses and horses; in truth, the agricultural live stock of any two countries, instead of being susceptible of ready comparison, can hardly be compared directly at all. The point is notoriously of great importance in historical investigations. In comparing England of the present day with the England of previous centuries the difference of the average weight and qualities of the live stock called by the same names has always to be considered. In nothing in recent years, as I understand, have some continental countries, such as France, made more remarkable improvement than in the quality of their live stock, so that with no increase in numbers, or little increase, there has been an enormous advance in real production. But the point is of equal importance in international comparisons. If Australia is to reckon with competitors in wool production, like the Argentine Republic, the average clip per sheep in the respective countries is obviously a necessary coefficient in the calculation, and it becomes of great importance to study in what countries the average is increasing or diminishing, and so on. Officials at the head of the agricultural department in France have been greatly impressed by considerations like these, and have endeavored to substitute a count of cattle by weight for the mere count of heads, but even a correction like this would by no means be sufficient, as there might still be serious differences of quality. The comparisons, then, of agricultural production which one often sees, in which unlike units are taken as

equal without more ado, and reasoned upon as if there were no qualifications, are most misleading. Rectification to any exact degree might not in many comparisons be possible, but the consideration of the point would usually make it possible to turn the figures to support some useful conclusion.

In connection with these comparisons it should also be noticed that many of the deductions per head and per acre, into which it is usual to convert the figures of agricultural production, are calculated to mislead, even when the units themselves are comparable, because the comparisons are with the total acreage and total population of a country, and not with the special acreage and agricultural population. What could be more useless, for instance, than to compare two countries like England and the United States as regards their production of wheat or any other agricultural product per head of the whole population, the one population living on its own wheat and other products, and the other not. All such comparisons to be of any value should be made from the purely agricultural point of view,—to illustrate differences in the style of agriculture carried on, or in the fertility of any two countries. But they are often made with lingering notions that all states can, to some extent, be dealt with as agricultural units, which is far from being the case.

Coming to statistics of manufacturing production, again, and this to some extent applies to agricultural and mining production, what we find is that, save as to some particular industry in detail, and for the purposes of discussions of that industry by itself, there is really no common denominator between countries, except in so far as the production of their respective industries can be represented in money. The coal and iron of one country are not the same as the coal and iron of another; the wool is not the same; the cotton, woollen, and linen manufactures of the one cannot be expressed in the same units of quantity as the similar manufactures of the other; the same with manufactures of metals, leather, and wood, and with machines of all kinds. Even if there is a general likeness in industrial characteristics of any two countries such as England and France, yet the different distribution of the leading industries makes any real comparison between the two, as a rule, impossible, except so far as it can be done in money. To make the comparison in money again presents new difficulties. The value of different kinds of production cannot well be reckoned up.

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Coming next to imports and exports, the point I would urge first is the initial difficulty of a bare comparison of the figures themselves. Imports and exports, instead of giving us easy statistics for many of the purposes for which they are used, are rarely very difficult. I refer especially to the values. Imports are stated in one country at the value of the goods as at the place of shipment; in another as at the place of arrival. In one country the basis of the statement is a declaration of the value by the importer, checked by the customs authorities; in another there is an efficient commission of values, which takes note of market prices, and fixes official prices for everything at more or less frequent intervals. The same with the exports. The denominators are hardly ever the same in any two countries. The result is that there are continual misstatements by amateurs on such questions as a comparison of two countries in respect of the progress of their foreign trade, or in respect of what is called the balance of trade. The falling off of the foreign trade of one country is contrasted with the growth of the foreign trade of another country at the same time, the truth being that in the one case, owing to the system of valuing by merchants' declarations, the volume of the foreign trade expressed in money responds instantly to variations in the market price, while, in the other, owing to the system of official prices fixed at intervals, the volume of trade does not respond at once to variations in market price. In one country, again, what is called an adverse balance of trade appears to be larger in proportion than it is in another country, largely because the imports are valued as at the place of arrival, including freight and other charges to that place; while in the country with which comparison is made the value is taken at the place of shipment, and does not include such additions. In the latter case, therefore, the exports form a total more nearly approximating that of the imports than in the former. All this confusion is due simply to the fact that the units of the imports and exports are not, in fact, the same. The record is not made in the same way.

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Generally, however, I should like to add that the selection of foreign trade, as specially a test of the welfare of nations, does not seem to be in any way justified. Whether the foreign trade of a given country is large or small in proportion to its whole production is an affair to a large extent of size or of historical evolution, and nothing can be

made of comparisons unless attention is given to the point I have already suggested,—that of size and general similarity of conditions. But it is quite conceivable that nations might approximate to each other in many respects, and the one have a large foreign trade and the other not, yet both be in much the same condition of individual prosperity. Accident might determine that the one should be more self contained than the other, so that its exchanges with other countries should bear a less proportion to its total industry. France and England are very good illustrations of essential differences of this sort, England having much more manufacturing, shipping, and foreign trade than France, but France being certainly a highly prosperous nation, with home industries of different kinds which England either has not at all or not to the same degree, and the products of which are only or largely obtained in England by exporting something else. All these general comparisons between nations in which the foreign trade is spoken of or assumed to be representative of the total trade are therefore very much to be deprecated. Import and export statistics, apart from the special danger of using them, which I have described, cannot be properly used for such comparisons.

I come next to international statistical comparisons in respect to wages, which present some curious difficulties of which most of those who make such comparisons seem totally unaware. In the primary use of records of wages, viz., their use by the laborer or workman, who has no employment, or small wages in one place, and finds he can better himself by going to another, these difficulties do not arise. If the facts recorded are true, the laborer or workman has something on which to act, and he can attend to all the points and qualifications necessary. But when the same records are used, or an attempt is made to use them, for more general purposes, difficulties begin. Length of working day, continuity of employment, and other points must all be recorded when a general statistical account of the wages-earning classes of a people has to be built up. So little have such matters been studied, however, that I doubt the existence of any comparison of wages in different countries which is even formally complete. No country has, as yet, a tolerably complete account of its own wages in which attention is given to all these points; much less is there any possibility of international comparisons.

As the primary records are, however, sometimes used for such comparisons, and we get such statements based on them as that wages are

50 or 100 per cent higher in the United States, say, than in England, special attention may be drawn to the failure of the comparison in point of logic. In the absence of any account of length of the working day and continuity of employment, no proper comparison can be made. This applies specially to a comparison between wages in out-of-door trades in a country like the United States, with a severe climate, and wages in the same trade in England. Wages in the former country may well be higher per nominal day or week of actual work, and yet the difference not be so great when the earnings and hours of labor of the whole year in England are reckoned.

What I would most desire to direct attention to, however, is the statistical importance of a somewhat different point. This is the distribution of the population according to remuneration. It is quite conceivable that in one of two countries the earnings, and still more the nominal wages, may be higher than in the other in every single employment which can be enumerated and compared, and yet the average earnings of the average wages-earning man may be higher in the latter country than the former, the reason being the different distribution of the people according to earnings. This can be shown very clearly in a theoretical comparison. Take first a community of 1000 wages-earners, with the people distributed according to earnings, in the following classes — A, B, C, D, and E — as follows: —

FIRST COMMUNITY.

Class.		Per Annum.	Nos.	Total.
A.	Earnings.....	£50	500	£25,000
B.	“	60	200	12,000
C.	“	70	100	7,000
D.	“	80	100	8,000
E.	“	90	100	9,000
		Total.....	1,000	£61,000

Average per head, £61.

And compare this with another community of equal numbers, in which there are also five grades, each remunerated at a lower rate than the corresponding grade in the first community, but in which the average of the whole is higher because of the different distribution of the people among the grades: —

SECOND COMMUNITY.

Class.		Per Annum.	Nos.	Total.
A.	Earnings	£40	100	£4,000
B.	“	50	100	5,000
C.	“	60	100	6,000
D.	“	70	200	14,000
E.	“	80	500	40,000
		Total.....	1,000	69,000

Average per head, £69.

In a comparison of rates of wages merely according to the nature of the employment, the wages in the first community would obviously appear higher than in the second, and this would be strictly true in a sense; but the inference would be untrue that the average earnings of the wages-earning classes in the first community, striking a true average, would be higher.

The principle of this theoretical comparison I believe helps to explain the actual facts as between an agricultural new country like the United States or Australasia and an old country like England. In the former agricultural wages are higher than in England, and almost every sort of employment, subject, however, to some qualifications, such as length of day and continuity of employment, is better paid than in England; but it is a *non sequitur*, not at first apparent, that the average earnings all around are also higher, the truth being that owing to the larger proportion of artisan classes in England the average earnings of the working classes may be as high or higher in England than in the United States, or at any rate not very far short. The mode of comparing wages in two countries is thus a most critical question. I have been often puzzled myself to explain how it is that we arrive in England at comparatively high figures for the aggregate income of the nation when most of the rates of wages are apparently so much lower — employment for employment — than they are in the United States or Australasia, and to a large extent I believe the solution I have now suggested is the true one. It is not enough, then, to compare employment with employment, but mass must be compared with mass.

Other dangers in these international statistical comparisons, such as differences in the purchasing power of money in different places, may be suggested. But I should not be disposed to lay so much stress on any other point as upon that of the relative importance of different employments in different countries. In these days of cheap freights and rapid transit, the equalization of prices in all countries has been carried very far indeed, the most important differences that remain being, I believe, artificial, arising from the protection of food products in countries like Germany and France, and the like causes. The different distribution of populations according to employments remains, however, an enduring cause of differences in their relative aggregate earnings and average earnings per head.

Finally, I have some remarks to make on the dangers of comparisons between nations as to their aggregate wealth.

Apart from all other difficulties that of the data themselves is here very great. It is hardly possible to obtain an account of the wealth of any country on any basis that can give a minutely accurate result, and it is the more difficult to obtain such accounts for any two nations made up in exactly the same way. If one country, therefore, is made out to have an aggregate wealth of about £250 per head, and another £300 per head, it may well be that, owing to the necessary want of exactness in the calculation itself for any country, and the differences of method employed in each case, the facts represented by these figures may either be much the same, or the country whose wealth is computed at the smaller figure may really be the richer of the two. Before any comparisons can be made at all, then, the methods observed in each case must be carefully followed, and particularly it must be observed whether they are likely to give a rack valuation or not. My own impression is that, except where the differences are enormous by almost any method of calculation, but little can be made of differences between country and country. Figures that are within sight of each other as much as are £250 and £300 per head, provided much the same methods have been followed, are practically much the same thing.

The comparison, also, is of little value unless accompanied by statistics of relative income, statistics of the sources of the wealth or income, and the like information. Accumulated wealth is only one element of economic strength.

A special point of great difficulty is how to deal with the wealth of a community which includes individuals having large investments abroad, and with the wealth of another community which is indebted to persons resident abroad in its public capacity, and whose individual members are also indebted to members of other communities. To a certain extent the foreign investments of a community in the first case are not available resources. Suppose the investments to be made in a foreign country with which it goes to war, the whole resources which are counted part of its wealth would really count on the other side. In the same way a country which has borrowed largely has the whole wealth really available for many purposes without any deduction for what it has borrowed. In war with a community from which it had borrowed this would at once be apparent, but in other contingencies, also, the indebtedness is not a real deduction, the wealth belonging to the foreign non-resident never being really taxable as if

he were resident. I have thought it expedient in my own calculations of the wealth of the United Kingdom to include the foreign investments of the members of the community at home as far as possible, and similarly I would make a deduction in the case of an indebted community equal to the amount of its indebtedness. All this, however, would be on the assumption of a continuation of peace, and subject to the qualifications that in certain circumstances a different calculation would practically require to be made.

There is one point in addition to be noticed in regard to the method of these calculations. Where property in two countries appears to be subject to a tax like probate duty or income tax on apparently much the same basis, the temptation is very strong to apply the calculated amount of such property per head to each nation respectively, but nothing could be more dangerous owing to the difficulty of the data. The laws and their administration of the respective countries compared would need careful examination before any such short cut could be used, and even then one ought not to be too sure of any single method. Unless some detail could be given no such method should be employed except as a check on a more detailed method. Such a method is also specially dangerous when the wealth of a community is arrived at without any items being given; by such a method, for instance, as that of dividing the average wealth subject to probate duty in a year by the numbers dying in a year, assuming the wealth per head thus arrived at to be the average wealth per head of the community, and then multiplying the numbers of the community by that figure so as to arrive at the aggregate wealth. The method may yield useful results if care be taken to establish *aliunde* what is the relation between the wealth per head of those members of a community who die within a year and the wealth per head of the members of a community as a whole, but when no such care is taken, and communities are compared whose probate and income tax laws are not really the same, the result of the comparisons may be the merest chance.